"May it please your Royal Highness.—On behalf of the Meteorological Society, and as Government Observer, I have the honour to thank your Royal Highness for having been graciously pleased to lay the Foundation Stone of the Mauritius New Observatory.

"I am sure I only give expression to the feelings with which the Society is animated, when I say that it will ever retain a most grateful sense of the generous sympathy and consideration which have induced your Royal Highness to come here, to-day, at personal inconvenience, to perform the interesting and important ceremony which the Society has had the extreme gratification to witness.

"If anything could enhance the pleasure which the Society now feels, it is the presence, on this auspicious occasion, of his Excellency, Sir Henry Barkly, who, during a long and an arduous administration, has not ceased to take a warm interest in the Society's objects, and to whom will be mainly due the merit of establishing in this distant Colony an Observatory which, I hope, will be second to none of the same nature in other portions of Her Majesty's dominions.

"Engaged for the most part in agricultural and commercial pursuits, but yet dependent for the necessaries of life on importations from other countries, and surrounded by a tempestuous ocean, the people of Mauritius, deeply interested in the progress of meteorological science, and many of them actively occupied in promoting it, will, I have no doubt, long preserve a fond recollection of the part which your Royal Highness has been kind enough to take in this day's proceedings.

"But the labours to be carried on here will be not merely of local utility. I trust they will also contribute to the advancement of meteorology and of terrestrial magnetism generally, as well as of certain branches of physical astronomy. In this respect their chief practical aim will be to render service to the noble profession of which your Royal Highness is so distinguished a member; and next to the pleasure of contemplating the works of the great Author of Nature, I know no stronger incentive to perseverance than the circumstance that the building about to be raised on this solitary spot, in the heart of the Indian Ocean, for the special object of conducting researches calculated to be of use to the maritime nations of the world, will in all future time be associated with the cherished name of England's sailor Prince."

His Excellency the Governor briefly addressed the audience. His Excellency said that he had always, as Mr. Meldrum remarked, taken much interest in the Society, and had done all in his power to promote its objects. It gave him great pleasure that the foundation stone of a new observatory had been laid before his departure from the colony. The ceremony could not have been more appropriately or more gracefully performed than by his Royal Highness, who was not only the second son of Her Majesty the Queen, but also a distinguished naval officer. His Excellency concluded amid general applause, by heartily wishing every possible success to what he would propose to call the Royal Alfred Observatory. Thus terminated these interesting proceedings.

SCIENTIFIC SERIALS

Journal of the Chemical Society, June, 1870.—Messrs. T. Bolas and C. E. Groves give a description of the mode of preparation and the properties of tetrabromide of carbon, the discovery of which they had announced in the preceding number of the Journal. Bisulphide of carbon was digested with an excess of bromine in the presence of terbromide of antimony or of bromide of iodine in a sealed tube of 150° for 48 hours. The bromide can also be obtained from bromopicrin and bromoform by treatment with the same reagents. Tetrabromide of carbon crystallises in white lustrous plates, fusible at 91°, nearly insoluble in water, soluble in alcohol, ether, benzol, and bisulphide of carbon, decomposed by aqueous solutions of potassa and soda at 150°. With care it may be sublimed without decomposition. By reduction by nascent hydrogen it produces bromoform and dibromide of methylene. The authors intend to study the action of argentic oxalate, cyanide, &c., on this interesting compound. Prof. A. H. Church continues his researches on new and rare Cornish minerals, giving the analysis of restormelite, which appears to be kaolinite $Al_2 O_3 2SiO_2$, 2Aq, in which some of the hydrogen is replaced by potassium and sodium and a portion of the aluminium by iron. The specific gravity is 2·58, and the hardness about 2. Chalcophillite contains 8 CuO, $Al_2 O_8$, $As_2 O_5$, 24 or 25 Aq., it loses 13·79 per cent. of water *in vacuo*, corresponding to 11 H_2O; the specific gravity is 2·44. This number also contains the commencement of a very long and elaborate paper on the combinations of carbonic anhydride with ammonia and water, by Dr. E. Divers. The author gives a history of the different compounds which he has examined, and describes no less than nine processes for the preparation of normal ammonium carbonate $CO_2 (OH_2)_2 (NH_3)_2$. Its properties and reactions are also fully given. In the second section, only a portion of which appears in this number, the preparations and properties of the half acid ammonium carbonate are detailed.

THE *Revue des Cours Scientifiques* for June 18, is almost entirely occupied with a translation of Prof. Huxley's address before the Geological Society on the course of palæontology during the last eight years. M. Bernard also proceeds with his course of lectures on suffocation by the fumes of charcoal, which is again continued in the following number, where we find also a paper read before the Congress of German Naturalists and Physicians at Innsbrück by Prof. Kékulé, on chemical work, and a review by Prof. Duclaux, of Pasteur's Researches on the Silkworm Disease. In the number for July 2, is a very important article by Prof. Agassiz on the Gulf Stream, being a report of the dredgings from the bottom of the Gulf Stream, made during the third expedition of the U.S. steamer *Bibb*. Prof. Agassiz believes that in the cretaceous period a current set in in the Atlantic from the north-east to the south-west, North and South America being then distinct continents, and that it was only at a subsequent period that communication between the Atlantic and Pacific became interrupted, and that the Gulf Stream set in in the opposite direction. In the same number is a continuation of M. Berthelot's paper on isomeric states of simple substances, treating especially of sulphur.

SOCIETIES AND ACADEMIES

LONDON

London Mathematical Society, June 9.—Prof. Cayley President, in the chair. The Hon. Sir James Cockle was elected a member. Mr. Spottiswoode, V.P., having taken the chair, the president communicated the following "Note on the Cartesian, with two imaginary axial foci." Let A, A′, B, B′, be a pair of points and antipoints; viz., A, A′, the two imaginary points, co-ords ($\pm \beta i$, 0); B, B′, the two real points, co-ords (0, $\pm \beta$), and write ρ, ρ', σ, σ', the distances of a point (x, y) from the four points respectively, say

$$\rho = \sqrt{(x + \beta i)^2 + y^2} \qquad \rho' = \sqrt{(x - \beta i)^2 + y^2}$$

$$\sigma = \sqrt{x^2 + (y + \beta)^2} \qquad \sigma' = \sqrt{x^2 + (y - \beta)^2}$$

we have

$$\begin{aligned} \rho^2 + \rho'^2 &= 2(x^2 + y^2) - 2\beta^2 \\ &= \sigma^2 + \sigma'^2 - 4\beta^2 \end{aligned}$$

$$\begin{aligned} \rho\rho' &= \sqrt{(x + \beta i + yi)(x + \beta i - yi)(x - \beta i + yi)(x - \beta i - yi)} \\ &= \sigma\sigma' \end{aligned}$$

and thence

$$(\rho + \rho')^2 = (\sigma \times \sigma')^2 - 4\beta^2$$

$$(\rho - \rho')^2 = (\sigma - \sigma')^2 - 4\beta^2$$

or say

$$\rho + \rho' = \sqrt{(\sigma + \sigma')^2 - 4\beta^2}$$

$$i(\rho - \rho') = \sqrt{4\beta^2 - (\sigma - \sigma')^2}$$

The equation of a Cartesian having the two imaginary axial foci, A, A′, is

$$(p + qi)\rho + (p - qi)\rho' + 2k^2 = 0$$

viz., this is,

$$p(\rho + \rho') + qi(\rho - \rho') + 2k^2 = 0$$

or what is the same thing, it is

$$p\sqrt{(\sigma + \sigma')^2 - 4\beta^2} + q\sqrt{4\beta^2 - (\sigma - \sigma')^2} + 2k^2 = 0$$

which is the equation expressed in terms of the distances σ, σ', from the non-axial real foci, B, B′. The radicals are to be taken with the signs ±. This equation gives, however, the Cartesian in combination with an equal curve situate symmetrically therewith in regard to the axis of y.

The distance σ, σ' may conveniently be expressed in terms of a single variable parameter θ; in fact, we may write

$$\pm p\sqrt{(\sigma + \sigma')^2 - 4\beta^2} = -k^2 - k\theta$$

$$\pm q\sqrt{4\beta^2 - (\sigma - \sigma')^2} = -k^2 + k\theta$$

that is

$$\sigma + \sigma' = \sqrt{4\beta^2 + \frac{k^2}{p^2}(k+\theta)^2}$$

$$\sigma - \sigma' = \pm\sqrt{4\beta^2 - \frac{k^2}{q^2}(k-\theta)^2}$$

So that assigning to θ any given value, we have σ, σ', and thence the position of the point on the curve. We may draw the hyperbola $y^2 = 4\beta^2 + \frac{k^2}{p^2}x^2$ and the ellipse $y^2 = 4\beta^2 - \frac{k^2}{q^2}x^2$, and then measuring off in these two curves respectively the ordinates which belong to the abscissæ, $k + \theta$ for the hyperbola, $k - \theta$ for the ellipse, we have the values $\sigma + \sigma'$ and $\sigma - \sigma'$, which determine the point on the curve. Considering k, p, q, β as disposable quantities, the conics may be any ellipse and hyperbola whatever, having a pair of vertices in common. The author then proceeded to draw the curve and point out some of its peculiarities.

Mr. T. Cotterill then gave an abstract of his paper "On the intersection of curves, and a collinear correspondence in certain réseaus," going into the discussion of the following theorem:—If the assemblage of all the points of intersection of two plane curves be said to form an "intersect," and a series of groups of points, called the first, second, third, &c., be taken on a plane curve of an order > 2, such that the points in every two successive groups form an *Intersect;* then the points in any odd and any even group, or in any number of odd and an equal number of even groups, also form an *Intersect*. Amongst other applications of this theorem, certain exceptions were pointed out in the laws laid down concerning the intersection of curves. Thus a system of 13 points can be found such that a quartic through 12 of the points must pass through the 13th, whilst the quartics through the 13 points do not intersect again in three fixed points, but any such quartic is cut by any other quartic of the system in three points collinear with a fixed point on the first quartic. Hence arises a correspondence of three collinear points similar to Geiser's correspondence in cubics through seven given points. The details of the correspondence, including certain envelopes given in the paper, refer to curves of any order.

Syro-Egyptian Society, June 7.—Mr. W. H. Black in the chair. Mr. Robert Hay, of Limplum, exhibited a large and unusually fine collection of Egyptian Antiquities, the property of his late father, author of "Views in Cairo," by whom they were collected between the years 1828-33. They consist chiefly of five classes of objects. Bronzes, terra cottas, vases, funereal remains, and amulets in precious stones, and porcelain, besides six large mummies with their outer cases more or less complete. Mr. Bonomi, who gave an explanatory lecture on the various antiquities, pointed out the following objects as being noteworthy either from their rarity or beauty.

1. A large and fine bronze figure of Khonso, twenty-six inches high (No. 32), partly overlaid with antimony, and enamelled with a white opaque pigment, to represent the mysterious garment of that divinity. The head, hands, and collar had been gilt, and the eyes, staff, and mens inserted, but these latter had been lost before it was obtained by its late owner. The workmanship of the statue is of the best Theban art, and is an admirable illustration of the great chemical knowledge possessed by the ancient Egyptians.

2. A small terra cotta statue of a Royal Scribe (706), habited in the costume of the nineteenth dynasty. The seed bag hangs over the right shoulder instead of the left as usual, and the crossed hands clasp on his breast a figure of a hawk with human head and expanded wings. This bird symbolised the soul in Egyptian theroglyphy, and a like figure is used in Psalm xi. 1. Unfortunately this statue has been much injured. A second and more perfect example in limestone (No. 159) was also exhibited. Both rare specimens.

3. Four statues, one in bronze, one in stone, and two in porcelain (Nos. 12, 116, 846), of the Great Theban Divinity, Amun Ra. These figures are of rare occurrence in any material, as about the reign of Amenophis III., the worship of Amun Ra was overthrown, and his name sedulously erased from all inscriptions throughout Egypt, even upon the top of the loftiest obelisks. In a later period, that of Ramesis II., however, the worship of this divinity was resumed, and his name again appears on the monuments.

4. A porcelain amulet (894), representing a human-headed scorpion, having the tail turned up over the back. The head of this figure was originally surmounted by a crown or head-dress. Exquisite finish, probably unique.

5. A wooden tablet (539) of the kind described by some writers as astronomical, but more probably a votive stete dedicated to Homs, and intended as a charm or mystical talisman against accidents, the evil eye, and malign influences generally.

6. Several staves (572) in hard wood having a projecting spur or branch at the top. These staves were carried by the priests in funeral processions, and for some unknown reason it was necessary that they should be furnished with a short projection at a certain angle near the upper extremity, for if this were wanting in this natural stick it was supplied by art; such a specimen so furnished (573) was also exhibited.

7. A small bronze figure of the Goddess Pasht holding a shield in her right hand, with the left extended.—The preceding formed only a part of the objects successively noticed by the lecturer. Many domestic articles, models, lucernæ and personal trinkets remained, which from the lateness of the hour could not further be commented upon. The explanations of Mr. Bonomi were afterwards supplemented by various remarks from Messrs. Cooper, Cull, Hewlett Ross, Williams, Mills, Christie, Drach, W. H. Black, and other gentlemen, and it was further announced by the chairman (Mr. W. H. Black) that a special meeting would be convened for the first Tuesday in July, when the drawings, MSS., and papyri of the late Mr. Hay would be exhibited, and also a collection of photographs lately sent from Syria by Dr. Cull, in illustration of the same. It may be gratifying to our antiquarian friends to know that by special permission of the Council of the S.-E.S., the collection may be viewed during this present month at their rooms, No. 22, Hart Street, W.C., between the hours of eleven and four, where all particulars respecting the destination of the antiquities may be obtained.

Dublin

Royal Irish Academy, June 13.—Rev. Professor Jellett, F.T.C.D., president, in the chair. The minutes of the previous meeting were read and confirmed. Dr. Sigerson, F.L.S., read a paper entitled "Further Researches on the Atmosphere." He showed that his former discoveries had been confirmed by later investigations, and proceeded to detail the results of his examination of "special atmospheres." His lecture was illustrated with large diagrams representing some of the objects discovered. In "iron factory" air he found carbon, ash, and iron. The iron was discovered to be hollow balls averaging one two-thousandth part of an inch in diameter, their shell being only one thirty-thousandth, and the iron was then found to be translucid. In "shirt factory" air there were found to be filaments of linen and cotton with minute eggs. The air of thrashing and oat-mills had fibres, fragments, starch grains, and spores. Scutch mills, from the character and quantity of the spongy, spiky dust and its effects, he declared to be human slaughter-houses. By a suggested alteration, the works could be kept free of the dust, and many lives saved. In the air of printing offices antimony was expected, and Dr Sullivan's analysis confirmed the expectation. It is, probably, present to an injurious extent in type-foundries. Stable air was shown to contain scales and hairs, and hair-dressers had a similar atmosphere. Smoke being microscopically examined, the tobacco-smoker's air was shown to contain globules of nicotine. He concluded by stating conclusions arrived at with regard to lung-functions and contagion. The results of Dr. Sigerson's investigations proved, as might be expected, that the air in special workshops contained floating in it particles of the *débris* of the different materials operated on in these particular localities. Some discussion followed, at the conclusion of which, on the motion of Prof. Sullivan, the paper was referred to the Council for publication. John P. Keane, C.E., Calcutta, and Hugh Leonard, Kylemore, were elected members of the Academy.

Paris

Academy of Sciences, June 20.—M. R. Clausius presented a note on a quantity analogous to the potential and on a theorem relating to it. M. Bertrand communicated a note by M. G. Darroux on the surface of the centres of curvature of an algebraic surface.—A memoir was read by M. Maurice Lévy on the general equations of the internal movements of ductile solid bodies beyond the limits at which elasticity can restore them to their original state.—The following papers on subjects connected with physics were presented to the meeting:—On the variations of temperature produced by the mixture of two liquids, by M. Jamin, upon which M. Bussey made some remarks.—On the electrical effects produced by the contact of inoxidisable metals with acids and neutral and saturated saline solutions, and on capillary affinities, by M. Becquerel. The author describes the results obtained with wires of pure platinum and gold, treated as described in a former communication, but immersed in acid or saline fluids.—Determination of the terrestrial magnetic intensity in absolute value, by MM. A. Cornu and J. Baille, presented by M. E. Becquerel, in which the authors describe a series of experiments made in accordance with the methods of Gauss and Weber.—Experimental researches upon the duration of the electric spark, by MM. Lucas and Cazin, also presented by M. E. Becquerel.—On the law of the points of congelation of saline solutions, by M. Güldberg.—A note by M. G. Rayet on the reversal of the two sodium lines in the spectrum of the light of a solar protuberance was presented by M. Delaunay.—M. Periseux communicated a note on the transit of Venus in 1874, containing a numerical correction of his former paper on this subject.—M. Delaunay presented a note by M. H. Tarry on the so-called showers of dust and blood. The author notices the storm phenomena preceding the showers of sand which fell in the south of Europe on the 10th and 24th March, 1869, and the 14th February, 1870, indicating that in each case a great barometric depression, accompanied by a violent wind storm, travelled from the north to the south of Europe, crossing into Africa, and returning thence laden with sand from the Sahara. He identifies the material deposited in these storms in all cases with the Sahara sand.—M. C. Dufour read a note relating to magnetic perturbations observed by Saussure at the Col du Géant before the great storm of 1788. M. H. Sainte Claire Deville communicated a note by M. C. Schlœsing on the precipitation of mud by very dilute alkaline solutions. The author stated that a very small quantity of a saline solution facilitates the deposition by water of earthy matter held in suspension by it, and that a deficiency of saline constituents is often the cause of water remaining muddy when standing in clearing tanks.—A note by M. Scheurer Kestner on the composition of crude soda and the loss of sodium caused by the adoption of Le Blanc's process was presented by M. Balard. The author noticed the chief compounds with which crude soda is contaminated, and stated as the result of his researches upon Le Blanc's method that in the fusion of crude soda there is no reduction of soda-salts into metallic sodium, and that the greater part of the loss experienced is due to the formation of insoluble compounds, and averages about 5 per cent.—M. Bertrand communicated a note by M. Rabuteau, on a new, simple, and rapid mode of quantitative determination of the ammoniacal salts, and on the reason why these salts can exist normally in the organism only in infinitesimal quantities. The author stated that chloride of soda prepared by pouring a solution of two parts of carbonate of soda into one part of chloride of lime contains an excess of carbonate and free soda, and that, by the aid of heat, this solution decomposes ammoniacal salts with evolution of nitrogen. From the amount of nitrogen evolved, the quantity of ammonia may be calculated. He considered that the alkalinity of the blood would enable it in like manner to decompose any ammoniacal salts contained in it.—A note on the tribromhydrines, by M. Berthelot, was presented by M. Bertrand, in which the author maintained the isomerism of those compounds in opposition to the opinion of M. Henry.—M. H. Sainte-Claire Deville communicated a note by M. Fontaine on the preparation of bibrominated ethylene, in which the author described a new method of obtaining that compound.—M. Wurtz presented a note on an aromatic glycol, by M. E. Grimaux.—An extract from a letter from M. Pasteur to Marshal Vaillant, describing the results obtained in breeding French races of silkworms, at Villa-Vicentina, was read.—M. C. Robin presented a note by M. Picot containing the results of some experimental researches upon suppurative inflammation and the passage of leucocytes through the walls of vessels.

June 27.—M. Serret presented a note by M. R. Hoppe on a corollary to a theorem of Mr. Crofton's; and a note by M. F. Lucas on some new properties of the potential function was communicated by M. Delaunay.—M. d'Abbadie presented a note by M. J. Hoüel on the selection of the angular unit, containing a further discussion of the question of the decimal division of the quadrant or the circle, and supporting the former as the unit. M. Yvon Villarceau remarked upon this paper, and maintained that the decimal division of the circle is preferable to that of the quadrant.—M. H. Sainte-Claire Deville read a paper entitled "Observations with regard to a Note by M. Jamin on the Variations of Temperature produced by the mixture of two Liquids."—A note by M. J. Chautard on the direction of the currents induced by means of electrical discharges was read.—A letter from Mr. C. K. Akin, claiming priority in the method of calorimetry employed by M. Jamin and ascribed to M. Pfaundler, was read; and M. Neyreneuf presented a note on the phenomena of electrical condensation.—A paper by M. Martin de Brettes on the determination of the thickness of iron casing that can be traversed by a projectile of which the weight, the calibre, and the striking velocity are known, was read, indicating the formulas to be employed, and giving a table of experimental results contrasted with those obtained by calculation.—A paper by Mr. J. N. Lockyer on the last eclipse of the sun observed in the United States was read.—The following papers on subjects connected with chemistry was communicated:—Investigations on some new derivations of triæthylphosphine, by MM. A. Cahours and H. Gal; letters by M. H. Bouilhet and Klein on the deposition of nickel by galvanism, presented by M. Dumas; on a new method of preparation of the chlorobrominated organic compounds by M. Henry; on silicopropionic acid by MM. Friedel and Ladenburg, upon which MM. Dumas and Thenard made some remarks; and a note on phospho-platinic compounds by M. Schützenberger.—A note by M. Montagna was read noticing the occurrence of organic remains in rocks regarded as of igneous origin; and M. de Vemeuil made some remarks on a memoir by M. Dieulafait on the zone of *Avicula contorta*, and the Infralias in the south and south-east of France.—M. de Clos communicated a note on the germination (or twin growth) of the whorls of floral axes in the Alismaceæ.—The remaining papers read need no notice, except one, of which unfortunately the title only is given us, in which M. Tremblay suggested *a means of terminating the present drought.*

BOOKS RECEIVED

ENGLISH.—The Revival of Philosophy at Cambridge: C. M. Ingleby (Hall and Son).

FOREIGN.—Annales de Chimie et de Physique, No. XX.—Annalen der Physique und Chemie, No. 5, Repertorium, Heft iv.—(Through Williams and Norgate)—Traité d' Histoire naturelle: M. A. T. Noguès.—Jahresbericht über die Leistungen der chemischen Technologie für 1869: J. A. Wagner.—Prodromus Floræ Hispanicæ, Vol. I.—Etudes sur les Diatomacées: Ch. Manourry.

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